

IN THE CLAIMS:

Please amend the claims as shown in the following listing of claims, which replaces all previous such listings.

1-42. (Canceled)

43. (Currently Amended) An osteogenic sponge composition comprising:

a highly mineralized sponge implant device, said device being three-dimensionally stable but flexible, said device exhibiting sufficient flexibility to be rolled up on itself when hydrated, said device consisting essentially of a resorbable sponge matrix formed of lyophilized collagen and having particulate biocompatible mineral embedded within said matrix, said device comprised 1% to 3% by weight of the lyophilized collagen and 97% to 99% by weight of the particulate biocompatible mineral; and

an osteogenic factor effective to stimulate both osteoblasts and osteoclasts when administered to a human, and wherein said osteogenic factor is incorporated into said sponge implant device in such an amount as to stimulate the osteoclasts sufficiently to cause an increase in the rate of resorption of said resorbable sponge matrix when said sponge implant device is implanted in a human; and

wherein said particulate biocompatible mineral is resorbed more slowly than said resorbable sponge matrix when said sponge implant device is implanted in a

human and thereby provides a scaffold for bone ingrowth that remains after said resorbable sponge matrix is resorbed.

44. (Previously Amended) The device of claim 43 wherein the particulate biocompatible mineral comprises bone particles.

45. (Previously Amended) The device of claim 43 wherein the particulate biocompatible mineral includes a synthetic ceramic.

46. (Previously Amended) The device of claim 45 wherein the ceramic material includes a calcium phosphate ceramic.

47. (Previously Amended) The device of claim 46 wherein the calcium phosphate ceramic is biphasic calcium phosphate.

48. (Canceled)

49. (Previously Amended) An interbody spinal fusion device, comprising:
a load bearing member sized for insertion between adjacent vertebrae; and
a composition according to any of claims 43-47 retained by said load bearing member.

50-51. (Canceled)

52. (Previously Amended) The osteogenic sponge composition of claim 43 wherein the collagen comprises telopeptide collagen.

53. (Previously Added) The osteogenic sponge composition of claim 52, wherein the osteogenic factor comprises a bone morphogenic protein.

54. (Previously Added) The osteogenic sponge composition of claim 53, wherein the bone morphogenic protein comprises BMP-2 or BMP-7.

55. (Previously Added) The osteogenic sponge composition of claim 54, wherein the bone morphogenic protein comprises BMP-2.

56. (Previously Amended) The osteogenic sponge composition of claim 43, wherein the particulate biocompatible mineral has an average particle diameter of greater than about 0.5 millimeters.

57. (Canceled)

58. (Previously Amended) The osteogenic sponge composition of claim 43, wherein the particulate biocompatible mineral has an average particle diameter in the range of about 0.5 millimeters to about 5 millimeters.

59. (Previously Amended) The osteogenic sponge composition of claim 58, wherein the particulate biocompatible mineral has an average particle diameter of about 1 millimeter to about 3 millimeter.

60. (Currently Amended) An osteoinductive composition effective for the induction of new bone growth in a human patient, comprising a highly mineralized sponge implant device, said device being three-dimensionally stable but flexible, said device exhibiting sufficient flexibility to be rolled up on itself when hydrated, said device comprising a resorbable sponge matrix and a particulate biocompatible mineral embedded within said matrix, said device comprised at least 95% by weight of the particulate biocompatible mineral;

wherein said resorbable sponge matrix comprises collagen, and said particulate biocompatible mineral comprises a calcium phosphate ceramic or bone; and

an osteogenic factor effective to stimulate both osteoblasts and osteoclasts when administered to a human, and wherein said osteogenic factor is incorporated into said sponge implant device in such an amount as to stimulate the osteoclasts sufficiently to cause an increase in the rate of resorption of said resorbable sponge matrix when said sponge implant device is implanted in a human; and

wherein said particulate biocompatible mineral is resorbed more slowly than said resorbable sponge matrix when said sponge implant device is implanted in a human and thereby provides a scaffold for bone ingrowth that remains after said resorbable sponge matrix is resorbed.

61. (Canceled)

62. (Previously Amended) The device of claim 60, wherein the osteogenic factor comprises a bone morphogenic protein.

63. (Previously Added) The device of claim 62, wherein the bone morphogenic protein comprises BMP-2 or BMP-7.

64. (Previously Added) The device of claim 63, wherein the bone morphogenic protein comprises BMP-2.

65-67. (Canceled)

68. (Previously Amended) The osteogenic sponge composition of claim 43, wherein said resorbable sponge matrix comprises fibrillar collagen.

69-72. (Canceled)

73. (New) An osteogenic sponge composition effective for the induction of new bone growth in a human, comprising:

a highly mineralized sponge implant device, said device being three-dimensionally stable but flexible, said device comprising a resorbable sponge matrix formed of collagen and having particulate biocompatible mineral embedded within said matrix, said device comprised 1% to 3% by weight of the collagen and 97% to 99% by weight of the particulate biocompatible mineral, said device prepared by providing a slurry including the collagen and the particulate biocompatible mineral, freeze-drying the slurry to form a dried sponge material, and crosslinking the dried sponge material to result in a three-dimensionally stable but flexible device, said device exhibiting sufficient flexibility to be rolled up on itself when hydrated; and

an osteogenic factor effective to stimulate both osteoblasts and osteoclasts when administered to a human, and wherein said osteogenic factor is incorporated into said sponge implant device in such an amount as to stimulate the osteoclasts sufficiently to cause an increase in the rate of resorption of said resorbable sponge matrix when said sponge implant device is implanted in a human; and

wherein said particulate biocompatible mineral is resorbed more slowly than said resorbable sponge matrix when said sponge implant device is implanted in a human and thereby provides a scaffold for bone ingrowth that remains after said resorbable sponge matrix is resorbed.

74. (New) An osteogenic composition effective for the induction of new bone growth in a human patient, comprising:

a highly mineralized sponge implant device, said device being three-dimensionally stable but flexible, said device comprising a resorbable sponge matrix and a particulate biocompatible mineral embedded within said matrix, said device comprised 1% to 3% by weight of a material forming said sponge matrix, and 97% to 99% by weight of the particulate biocompatible mineral, wherein said resorbable sponge matrix comprises collagen, said particulate biocompatible mineral comprises biphasic calcium phosphate, ~~and~~ said resorbable sponge matrix has been prepared by a process comprising freeze-drying a slurry including the collagen and particulate biocompatible mineral, and said resorbable sponge matrix exhibits sufficient flexibility to be rolled up on itself when hydrated; and

an osteogenic factor effective to stimulate both osteoblasts and osteoclasts when administered to a human, and wherein said osteogenic factor is incorporated into said sponge implant device in such an amount as to stimulate the osteoclasts sufficiently to cause an increase in the rate of resorption of said resorbable sponge matrix when said sponge implant device is implanted in a human; and

wherein said particulate biocompatible mineral is resorbed more slowly than said resorbable sponge matrix when said sponge implant device is implanted in a human and thereby provides a scaffold for bone ingrowth that remains after said resorbable sponge matrix is resorbed.